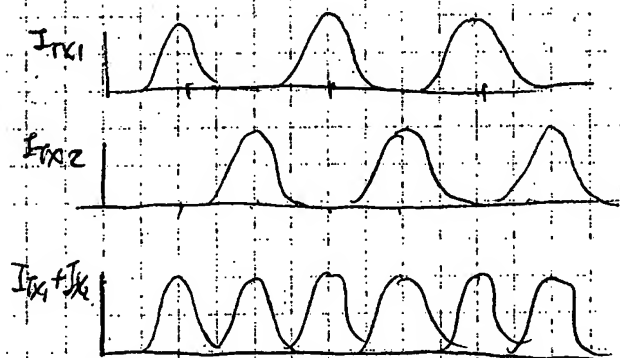
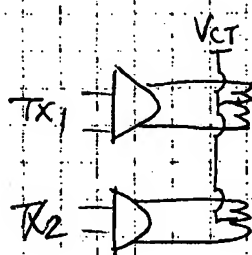
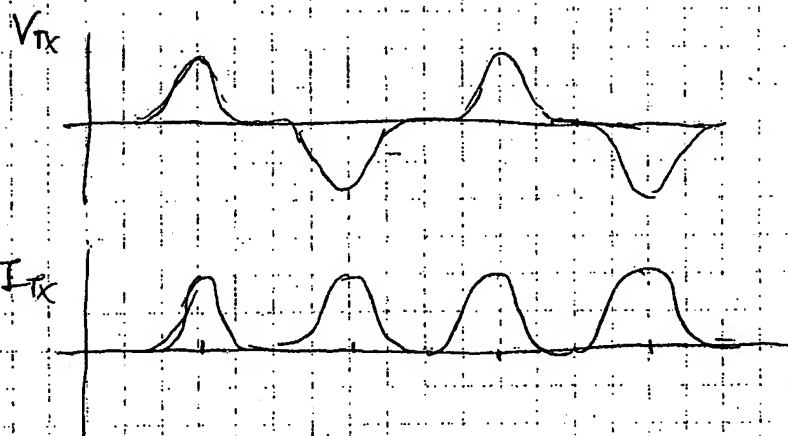


# EXHIBIT B

EMI

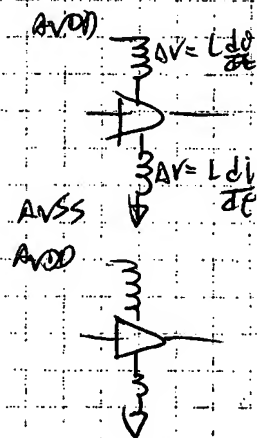
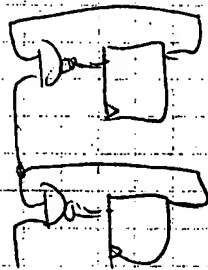


Mixing clock phase

✓ local  
✓ global

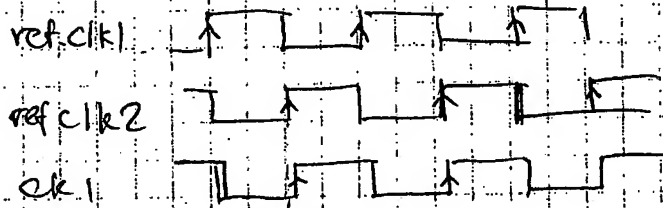
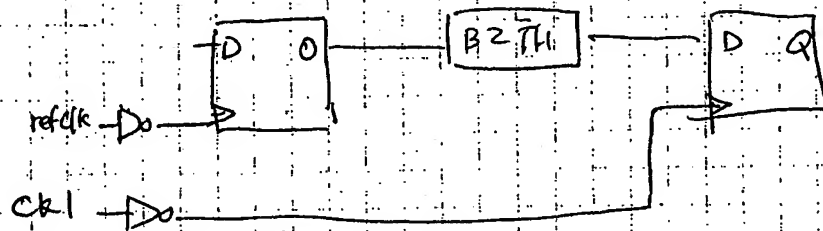
- pair to pair - adjacent pairs  
- port to port - Multiport  
Adjacent phy.

- reduce EMI
- reduce requirement for common-mode choke

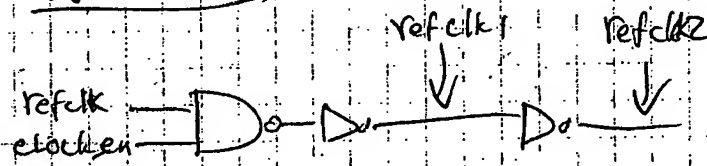


- Improvement  $\rightarrow$  Reduce power supply bounce
- Reduce EMI (clock switch a different time)

Decoder

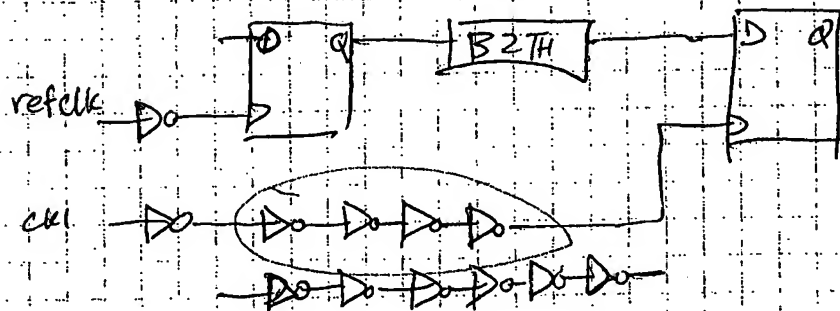


- refclk 2 (inverted from refclk1) is the input to DLT giving 180° Shift.

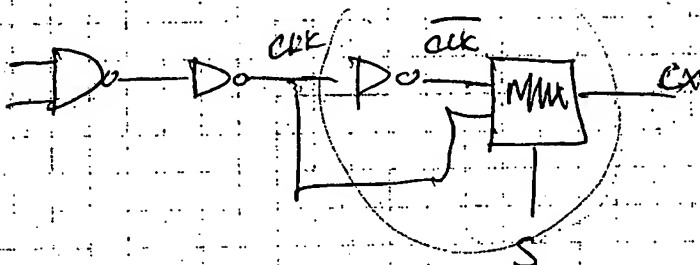


Changes

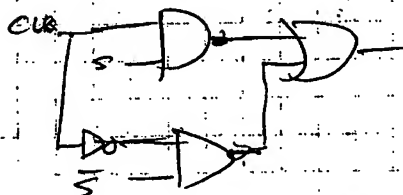
① change decoder to have clock delay



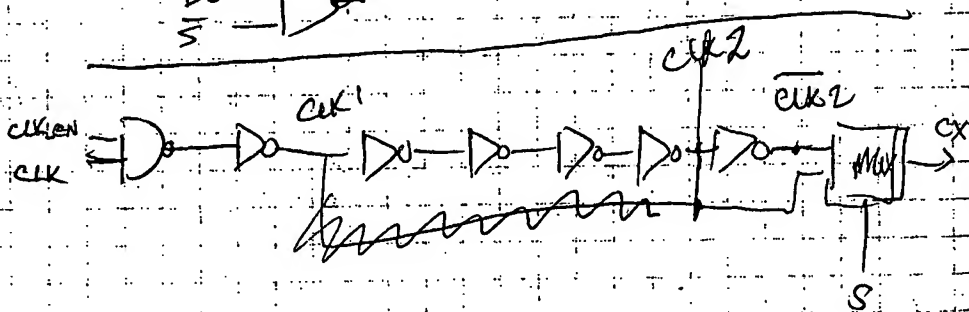
② refclk inversion - selectable



$$CX = CLK \cdot S + \overline{CLK} \cdot \overline{S}$$



(?)

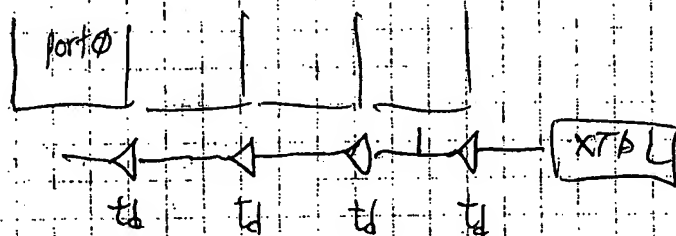


TXDAC phase

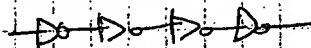
clk0	clk1	clk2	clk3
0	180	0	180

$$\text{Reg } 30-33: 15: 12 = 1010 \quad (3210)$$

TBG int  
4 ports



$$t_d = 4 \text{ currents}$$



$$t_d = \text{varies from } 0.4 \text{ ns} \rightarrow 1.0 \text{ ns}$$

$$t_d = 0.4 \text{ ns}$$

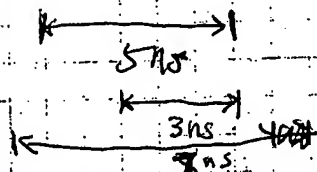
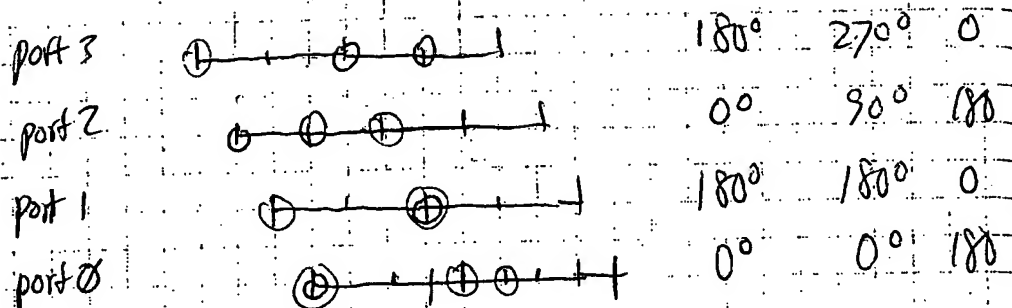
port 3		180	270	0
port 2		0	90	180
port 1		180	180	90
port 0		0	0	180

4.5 ns

4.5 ns

5.5 ns

$$t_d = 1 \text{ ns}$$



best choice is  $180^\circ, 0^\circ, 180^\circ, 0^\circ$  (3210)

9 ports  
 $t_d = 0.5 \text{ ns}$

